

**REMARKS**

Claims 1 to 18 and 20 to 44 remain in this application.

Claim 44 has been amended in response to the Examiner's helpful suggestions to correct typographical errors.

All claims have been amended to clarify that price as an independent variable of an algorithm defining an order is "dynamically changing"; and that price as the dependent variable is "continuously changeable responsive to changes in price of the independent variable". This new language more clearly distinguishes over Shepherd for reasons that will become fully apparent in the following rebuttal of the rejections

Claims 1-4, 8-9, 16, 24-27, 29, 36, and 41-44 stand rejected under 35 U.S.C. 102(e) as being anticipated by Shepherd (U.S. Patent 6,134,536).

Claims 5-7, 10-15, 17-23, 28, 30-35, and 37-40 stand rejected under 35 U.S.C. 103(a) as being unpatentable over.

Claim 40 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd '536 as applied to claim 24 above, and further in view of Borgato (U.S. Patent No. 5,950,178).

These rejections are all respectfully traversed in light of the amendments to all independent claims, which better distinguish over the teachings of Shepherd.

Appl. No. 09/359,686

**THE PRESENT INVENTION, AS DISTINGUISHED FROM SHEPHERD**

There are several major differences between the methods and apparatus disclosed in Shepherd and Applicants' claimed invention.

First, in Shepherd, the methods disclosed, and the claims relate, to the creation of a contract, fixed price bids for the contract, and a multitude of fixed price offers in a static environment. In Shepherd, a buyer of an insurance contract sets the terms of the contract, and the price that he is willing to pay. Nowhere in Shepherd is it claimed or disclosed that the bid is sensitive to the movement of a dynamically changing price, or value of another variable, as in Applicants' claimed system. The bid, in Shepherd, is at a fixed price, which neither changes with respect to another variable, nor is subject to another transaction. The algorithms used by the counterparties in Shepherd to establish their minimum entitlement are like analities performed by many on Wall Street and, like Shepherd, they result in a fixed price limit order being sent to an exchange.

In Shepherd, the sellers of insurance, because of the nature of the contracts, naturally view contracts in a probabilistic fashion, and may enter the probability that an event occurs and the cost of "paying off." These probabilities and potential payoffs are used by the system to calculate the price that the offering entity is willing to take. The sellers make offers in the form of probabilities of events, plus a calculation for profit. Nowhere in the disclosure or the claims are these offers, or even the probabilities, pegged or indexed to another variable or set of variables, or calculated by the system as a result of algorithmic manipulation using the price of a commodity, security, or index. Likewise, it is not contemplated that the probabilities entered and the resulting

B

Appl. No. 09/359,686

price of a transaction are contingent upon a contemporaneous transaction in an index, commodity security or any other item. Shepherd does not disclose nor claim any continuous or dynamic pricing or trading whatsoever.

What Shepherd does disclose with respect to a trade is; presuming that a price or index change would have an impact on the probabilities entered by a seller of insurance, the seller would have to input the new probability, and the system would create a new price (fixed) at which the seller would be willing to transact for the contract.

In contrast, Applicant's system does not presume to allow users to enter their own contract terms; the securities or contracts are predefined and input by the system administrators. The system allows multiple buyers of the same contract and facilitates full and partial execution against multiple counter parties, which are fully or partially executed. Applicants' disclosed system allows for three (3) different order types to be integrated: fixed price with no contemporaneous transaction in another security; floating price with no contemporaneous transaction where the price is algorithmically tied to another price; and conditional orders which float in price and are subject to a contemporaneous transaction in another item (the claimed invention).

Shepherd does not contemplate movement in the price of an independent variable as a cause for a transaction. It does not contemplate multiple buyers with different order types potentially matching with multiple seller order types where one order type can match with another order type like Applicants' system (a pegged or sensitive order matching automatically with a fixed price order as an example).

B

Appl. No. 09/359,686

Shepherd does match sellers with buyers. Shepherd allows a buyer to establish contract terms. Shepherd aids in the settlement process. Shepherd allows users to predetermine who can be a counterparty. Shepherd allows a contract guarantee mechanism -- none of which is claimed by Applicants.

Notwithstanding the prior discussion of the major differences between Shepherd's description and the Applicants' claims, the following differences also exist.

When an order comes into the mainframe of Shepherd, it is placed into a queue and compared with potential counterparty offers (counterparty offers are determined from probability fields entered by the counterparty). It is then traded under a set of rules, with all or the remainder subsequently placed in a file to be compared with other potential counterparty orders as they are submitted. When an order enters the Applicants' system it is compared with potential counterparty offers. It is then traded under a set of rules, with all or the remainder subsequently placed in a file to be compared with other potential counterparty orders as they are submitted. Shepherd's system works to this point the same as virtually every other trading system available to the marketplace including the NYSE, the CBOE, etc. But, they are all fixed price (somehow a buyer determines a price and the seller determines a price, and they do not change without further input by a user. Although most exchanges allow the automatic expiration of an order, this does not create a change in the price at which any party is willing to deal.)

The first layer of differences between any of these systems are the rules they use to "Match" or trade the orders. The simpler the orders, the simpler the matching

B

Appl. No. 09/359,686

system can be. While Shepherd may have several unique features to a trading system, most are outside the scope of Applicants' application (credit checks, guarantees, preferred counterparty controls are just a few).

Shepherd discusses a blind offering of probabilities by counterparties, and blind bids by ordering parties (neither the buyer nor the sellers know prior to a transaction, what others are offering or bidding). Shepherd's process then uses different rules to set the price of the trade (buyer advantage, seller advantage, or the midpoint to name a few). In this way, the buyer naturally sets a "maximum" price and each seller independently sets as a "minimum" price.

In other exchanges, e.g. NYSE (relied on by the Examiner by Official Notice), the limit price is the maximum/minimum price the buyer/seller is willing to pay/take. In Applicants' system, the first layer also uses a maximum or limit price, but unlike Shepherd, the limit price is viewable to all users, and thus there is no need to "create" an execution price. As stated above, Shepherd does not contemplate any "real-time" adjustment in the price of the contract, and even if it did, it would only do so upon the entry of another order because the event causing a re-evaluation described in Shepherd is the entry of a new order.

In contrast, with Applicants' system, specifically the trading and display methodologies start with the premise that there may be multiple sellers and multiple buyers, and the price of another item could cause a transaction between any buyer and seller combination. After the first level of trade processing, the Applicants' trade engine determines the events in the future that would allow a transaction between any

B

Appl. No. 09/359,686

buyer/seller to be created, and then it monitors for those events. For example, there may be a buyer at price A, and two sellers at higher prices, B and C, where price B is very sensitive to the price of security XYZ, and price C is only slightly sensitive. Applicants' system looks to where XYZ must go to create a trade between buyer and seller B, and also between buyer and seller C, monitors XYZ for those prices, and executes a transaction when those events occur. Shepherd makes no mention of any trading level beyond a simple A will buy here and B will sell there, and a trade can occur if B is below A. As Shepherd is a "blind" auction, there is no contemplated sensitivity to the price of other securities or contracts with respect to the display of the orders.

A third and more complex layer of the Applicants' claimed trading system is in its handling of orders which are of a conditional nature (conditional in the sense that the buyer/seller requires that a contemporaneous transaction in another security occurs). As new orders are entered, the Applicants' system not only looks for prices of other securities which could potentially create a trade as stated above, but also the events (like the sale or purchase of another security) that must take place if the trade is to occur. The Applicant's system then attempts to create those events by entering buy or sell orders to another exchange for the proper quantity of the other security (buyer A wants to buy at price N, and seller B wants to sell at price M where  $N=f(X)$  and  $M=g(X)$  (X being the price of XYZ), and buyer A wants to contemporaneously sell XYZ in the quantity  $b(QA)$  and seller B wants to contemporaneously buy XYZ in the quantity  $c(QB)$  (QA and QB are the quantities of the subject security that A wants to buy, and B wants to sell respectively. Nowhere in Shepherd is this contemplated, because Shepherd's

B

Appl. No. 09/359,686

trading methodology revolves around complexities surrounding analytics provided to counterparties, counterparty approvals, credit approvals, post execution contract management, and guarantees and limits, and ~~not~~ on complex methodologies surrounding a trading theory. Shepherd's system allows trades to occur (or not) where the price is predetermined by pre-set rules applied to the positive difference between fixed price A (determined by the buyer) and fixed price B (determined by the counterparty from fixed probability and payoff schedules entered by the counterparty); and conditions set by the counterparties like counterparty authorization, third party guarantees, (generally yes/no decisions).

The last layer of Applicants' system is one in which various combinations of the different order types can be traded against each other. For example; conditional against fixed price; floating price against conditional; conditional against conditional where the conditions may be different (conditional here means there must be a contemporaneous transaction) with or without remainders on one or both sides of the transaction (there can be remainders on both sides of a transaction if the amount of stock the system must buy or sell to effect a transaction which would leave one side partially remaining is not completely executed by a third party exchange).

#### SPECIFIC CLAIMS VS. CITED PASSAGES OF SHEPHERD

##### Claim 1

Shepherd, col. 7, lines 7-11 disclose three things: a large system to handle transactions between stakeholders, input and output data generated by those stakeholders, risk management contract pricing, and matching and subsequent

B

Appl. No. 09/359,686

processing (from the data generated by those stakeholders).

Shepherd, col. 16, lines 6-40 disclose an application for the matching of "primary product orders" where the application matches ordering party orders to counterparty orders where the counterparty order price is established through the use of an algorithm applied to a set of input variables entered by the counterparty stakeholder. The input variables are not disclosed as dynamic or continuous and the calculation by the matching process occurs upon the entry of an order (it is also disclosed that new or queued orders may be processed at any time pursuant to parameters or algorithms, which is specifically described as either the sequence in which orders are calculated, or the time at which all orders are calculated).

Shepherd, col. 39, lines 51-65 disclose that a counterparty can submit a set of parameters, that would algorithmically calculate a price, for a product (a predefined contract type). This describes the ability of Shepherd to allow the counterparty orders to be submitted prior to the submission of an ordering party order. It does not disclose that the input data used by the system is a real-time datafeed, which automatically updates the price.

Shepherd, col. 8, line 53 to col. 9, line 5 disclose that there can be a network of computers internal to Inventco, and connected through the security system to external systems. Component hardware/applications authorize connections; create timestamps to receive data from other parts of Inventco and timestamps, which are sent to external entities. Component hardware/applications protect the location of entities within Inventco from one another and from external entities. Component hardware/application



Appl. No. 09/359,686

also manage the routing of data received and to be transmitted within Inventco and to external entities. While this sounds like there could be multiple price feeds, in reality, this is a description of communications protocol software. For example, consider that external systems are simply networks in which their customers reside, and the system must be protected from any hacker who enters a customer system, or even a customer for that matter, who wishes to gather data about other customers. It is also used to halt other malicious attempts and can be used internally to partition other problems or computer glitches. The data that is transferred to and from external parties are files, which have bid attributes. A real-time price feed is not implied in Shepherd, nor is the use of a continuous feed. Protecting the location of entities within Inventco can mean IP address, not geographic location, which is typical among system architecture. Authorization and time-stamping are typical of all price/time priority trading systems like the NYSE.

In conclusion, the term algorithmic order in all of Applicants' claims does not mean that a fixed order price was generated by an algorithm, as in Shepherd (and many on Wall Street who use computers to automatically send orders to an Exchange upon the occurrence of events), but that the order itself is an algorithm passed to the system, used by the system, sent to counterparties, sent to the trade engine, and is not "converted into a fixed price", because the price of an underlying security or index is always changing and the ability to view a fixed price is not as meaningful in a continuously changing environment (the price combined with the sensitivity or the existence of the requirement that another security is contemporaneously traded with the

B

Appl. No. 09/359,686

algorithmic relationship is of significant importance.)

Claim 2

Claim 2 has been amended to clarify that the order quantity is in an algorithmic form requiring a continuous datafeed as an independent variable to the order quantity for reasons, *supra*.

Claim 3

In claim 3 the word "conditional" has been changed to "underlying" to correspond to a like change in claim 1, and to more specifically tie the matching of orders to movements in another security. Applicants' system also matches upon the entry of a new order as in Shepherd, but this matching is not being claimed except to the extent that orders are matched when new orders are entered when the orders are conditional upon another security being contemporaneously traded.

Claim 8

Shepherd, col. 17, line 37 to col. 18, line 19 discloses variables input by either an ordering party or a potential counterparty which detail 1. potential counterparties are filtered by there willingness to transact with one another (not all parties are willing to deal with all other parties (establishment of short list), 2. manual or anonymous are checked against each other (manual orders cannot match with anonymous because the manual order states that the counterparty that he must manually authorize is a counterparty or ordering party who wants to remain anonymous) and filtered out, 3. It then proceeds to get data from various sources to be used in the calculation of a price for each order, which include order data fields and parameters of the ordering party, 4.

Appl. No. 09/359,686

pricing parameters, exchange rates, commission rates and discount rates. The system described in Shepherd then compares the pricing parameters and determines if there is enough data to provide a price on the contract. (This whole process is used to determine the "short list" of potential counterparties whom are both willing and able with the data available to be matched and the yes or no answer to the question "can A enter into this contract with B?". It is not used in pricing, nor is it implied that any parameter is variable at this time beyond its effect on the above question.) What is disclosed is, that a different set of pricing parameters can be a function of data fields within the ordering party's order. We take this to mean that a different commission rate can be set for different ordering party's, or even that sets of probability/entitlement pairs can be different for different ordering parties e.g. if a counterparty knows a competitor is trying to lay-off a specific risk by bundling it with other risks and then intends to buy back a like contract (excluding that specific risk). In any event, this does not suggest that the price is variable due to changing prices in another security. The parameters are not algorithms, but more a combination of filtering, and if-then statements.

Claim 9

Although selling short is a typical term, the specific reference is too narrow in scope to include selling short. Selling short is more of an industry term describing the ownership position after the sale. Various checks must be made by systems to insure that users of a system do not inadvertently break a rule to which one party is required to adhere in the trading of securities or contracts. The NYSE requires an up-tick, the NASDAQ requires a +, 0+ bid or a trade above the bid, and other exchanges have

B

Appl. No. 09/359,686

different rules and disclosures like the CBOE's disclosure of a "contract to open" or a "contract to close" Clearly, most of the transactions in which an apparatus like Shepherd's is used will be a short sale.

Claim 24

Shepherd, col. 40, lines 41-62 disclose that various sequential order matching process can occur using different sequence rules or different matching rules. This is not a display device used by a trader. This seems to be different options the trading system has for establishing the price of a trade. Since all of the orders are fixed price orders, and the author seems to be describing a blind auction (otherwise why would an ordering party who can see the bids offer to pay more for the contract) the disclosure is somewhat removed from the view that a trader would see, and is not "a sorter that resequences the orders in real-time in the display field"

In Applicants' system, this is being displayed to a trader, the sorter resequences the orders in real-time as new independent variables are input, as the "re-sets" and independent variable's value to look at a scenario or see the effects of the sensitivity, and as new orders are entered (and expired, cancelled, killed, deleted or traded) Shepherd does not describe real-time independent variable price changes or independent variable quantity changes where the price or quantity change of an order changes as the price bid or offered or the quantity bid or offered changes.

Claim 44

Claim 44, and other independent claims, recites simultaneously executing a trade of said items in the same or diverse equity markets as a single electronically

B

variable (regarding Shepherd, col. 13, lines 51-65). In the TTU example given in Shepherd, the ordering party wishes to "pay" the counterparty in Prime TTU's during a specified time-frame (this is a form of currency and settlement for a trade) for the entitlement in the future. The entitlement is a number of TTU's established at maturity from a function comprising the log of the difference between two numbers (in this case the utilization of each company on the other company's network between the two cities). A fixed price maximum bid of 58,000 Prime TTU's is placed into the system by ordering party. Having previously submitted their pricing parameters for this product, Tasnet's bid is calculated to be 55,180 Prime TTU's, and likewise Aarcom's bid is calculated to be 55,390. A formal matching of Ordering Party Basstel and Tasnet at a price of 55,180. The 55,180 consideration is immediately transmitted to Tasnet. During the interim other calculations are executed by the Shepherd System to evaluate the value and standard dev. of the outstanding contract. At maturity, a final evaluation of the contract is calculated and resulting positive entitlements are transferred to Basstel.

A future on an index is much the same process as the preceding example, first a buyer establishes a price he is willing to pay for a defined contract, say the value of the S&P500 above or below 1200. If there are two sellers, who have previously established offering prices, the exchange will trade the option at the lowest offer price. Then as time passes, the exchange will publish valuation prices, which could be a calculated value, or prices at which buyers or sellers would trade. At maturity a final valuation takes place and a value is calculated for the underlying index (like the weightings of the S&P500 multiplied by their prices) and an entitlement (positive or negative) is created

and settled. In this case a "sponsor", the exchange, established the "product". There was an ordering party and a counterparty. Contract terms were settled at maturity and valued intermittently.

A key difference between the product of the present invention and all other exchanges extant is that, the matching of fixed price buy and fixed price sell orders occur in the other exchanges. These exchanges do not execute variable priced orders. If a trader wants to create an order that floats with the value of another security or is contingent upon the contemporaneous transaction in another security, he is out of luck; the exchanges will not accept the order and have no trading protocols established.

Applicants' foregoing arguments are submitted in direct rebuttal to the passages of Shepherd relied on by the Examiner for rejecting the claims of record. The Examiner's thorough consideration of all claims is commendable and greatly appreciated. However, the Examiner is respectfully requested to take a fresh look at Shepherd as compared to Applicants' claims, as now amended to emphasize Applicants' arguments submitted herewith.

The official notice taken by the Examiner regarding how securities are conventionally traded on the various public exchanges, and the disclosure of Borgato do not supply the teachings missing in Shepherd.

### CONCLUSIONS

The references of record do not teach a conditional order transaction network wherein the orders per se' are algorithms having dynamically changing price as an independent variable with price as a dependent variable being continuously changeable

B

in response to dynamic price changes in the independent variable. In Applicants' claimed system the algorithms are the orders themselves, not the overall transaction, as in prior art systems, which permit periodic updated fixed price inputs or limits as the order parameters.

In conclusion, the term algorithmic order in all of Applicants' claims does not mean that a fixed order price was generated by an algorithm, as in Shepherd (and many on Wall Street who use computers to automatically send orders to an Exchange upon the occurrence of events), but that the order itself is an algorithm passed to the system, used by the system, sent to counterparties, sent to the trade engine, and is not "converted into a fixed price", because the price of an underlying security or index is always changing and the ability to view a fixed price is not as meaningful in a continuously changing environment (the sensitivity combined with the price or the existence of the requirement that another security is contemporaneously traded with the algorithmic relationship is of significant importance.)

For the foregoing reasons, reconsideration of the rejections of record is respectfully requested, and an early notice of allowance is earnestly solicited.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Pursuant to 37 C.F.R. 1.17 and 1.136(a), the Applicant respectfully petitions for a one (1) month extension of time for filing a response in connection with the present application and the required fee of \$55.00 is attached hereto.

B

If necessary, the Commissioner is hereby authorized in this, concurrent, and further replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

By Anthony L. Birch  
Anthony L. Birch, #26,122

ALB/bb  
2907-101P

6915 Barrett Lane  
Bethesda, MD 20814  
(301) 652-6647

Attachment: Version with Markings to Show Changes Made

<b><u>Certificate of Transmission</u></b>	
I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class mail in an envelope addressed to:	
Commissioner of Patents and Trademarks, Washington, DC 20231	
Signature:	<u>Anthony L. Birch</u>
Printed Name:	<u>Anthony L. Birch</u>
Date:	<u>7/25/01</u>



**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:**

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**